



EV/PI CONFERENCE

Characteristics of Good Program Surveillance

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Agenda

- ❏ **Results of DoD IG Review**
- ❏ **Insight vs. Oversight**
- ❏ **“Outcome-based” Program Planning**

- ❏ **EV One Book Requirements**
- ❏ **Insightful EV Program Surveillance**
 - **Baseline Maintenance Exercise**
 - ▮ **Performance Analysis Exercise**
- ❏ **EV Reporting**
- ❏ **Discussion - “Real World Examples”**
- ❏ **Q&A**



DoD IG Review

- **Review Focus - Quality of Earned Value Management support to PMs**
 - **EVM system assessments**
 - ▮ **Earned Value data analysis**
- **Results based on review of 5 CAOs and survey of 24 PMOs**
 - ▮ **Only 7 of 24 PMOs said EVM data analysis performed by the CAO is “very important, value added analysis”**
 - ▮ **CAOs took average of 37 days to provide EV analysis to PMO**



DoD IG Review Areas for Improvement

- ⊗ **Reports focused on historical information**
 - Simply re-stated CPR
 - ▢ Should forecast cost and schedule impacts of technical risks/issues
 - ▢ Evaluate proposed work-arounds
- ⊗ **Explain differences between supplier and DCMC EAC's**
 - ▢ Supplement formula-based EACs with supporting analysis



DoD IG Review

Areas for Improvement

- ❑ **Develop metrics to measure health of supplier EVMS**
 - **Indicate areas of inadequate resource planning/control**
 - **May lead to poor C/S performance**
- ❑ **Improve timeliness of reporting**
 - **Request on-line access to supplier data**
 - **Synchronize PI reports with accounting cycle**
- ❑ **Improve training and share “best” practices**



Insight vs. Oversight

- ⊗ **Oversight - Government dictates “how”...Mil Stds, Government review proposed process changes**
- ⊗ **Insight - Government says “what” is required performance...use of supplier metrics to measure health of processes**
- ⊗ **PST perspective**
 - **Each functional area should have metrics**
 - ▮ **PI provides an “integrated” assessment**



“Outcome-based” Planning

- ❑ **One Book change in-work**
- ❑ **Program Integration process modified to conform with Government Performance and Results Act (GPRA)**
- ❑ **MOAs and Program Plans re-designed relative to program performance expectations**
 - **Establish quantitative measures**
 - ▮ **Basis for program surveillance activities**



“Outcome-based” Planning Process



- ⊗ **Outcome - Simple statement defining overall expected military utility**
- ⊗ **Results and Processes - Specific performance expectations/applicable supplier processes**
- ⊗ **Functions and metrics - DCMC surveillance functions/activities and evaluation criteria or metrics**



“Outcome-based” Planning Process

Example

- ❑ **Outcome: Rapid replenishment of depleted cruise missile inventory**
- ❑ **Results: Eliminate production bottlenecks and expedite repair process**
- ❑ **Processes: Quality Engineering, Over and Above repair**
- ❑ **Metrics: First Article Inspection failure rate, repair/rework cycle time, schedule variance**
- ❑ **Functions: Detail specific QA, Eng functions**



PI Process Initiatives

- ⊗ **HQ Info Memo 99-245 requests comments on draft One Book changes:**
 - ▮ **“Outcome-based” MOAs/Program Plans**
 - ▮ **No MOA -> No PI/PST**
 - ▮ **“Quad” Chart**
- ⊗ **PI “Road Shows” planned for Sep-Nov**
- ⊗ **Development of “on-line” PI Resource Center**



Earned Value -- What does the PI/PST do?

- ⊗ **One Book defines key PI/PST roles relating to Earned Value:**
 - **Audit EVMS usage/implementation**
 - ▢ **Incorporate Earned Value data into PST risk/issue assessment activities**
- ⊗ **Specific activities outlined in “Characteristics of good insightful EVM program analysis” - HQ Info Memo 99-220**



One Book - PI Chapter

- ⊗ **Para 4F5b, “PI/PST responsible for surveillance of EV system and application on the program. PST shall...”**
 - **Analyze supplier C/S variances and corrective action**
 - ▮ **Assess supplier EAC’s and develop independent estimates**
 - ▮ **Support IBRs, similar PMO led reviews**



One Book - PI Chapter

- ⌘ **FY99/00 Performance Goal 1.1.5 - Reduce % of contracts that have exceeded their C/S goals by more than 10%**
- ⌘ **Para 4F6c, “PI shall ensure that program EVM data is included in CPM portion of AMS”**
 - **Identify root causes of C/S variances and AMS input**
 - ▢ **For programs with C/S variances > 10% have “supplier get well” plan**
 - ▢ **Status on programs with >10% variances briefed at District/HQ MMRs**
 - > **Includes root cause info/CAO support to fix**



One Book - EV Chapter

- ⊗ **Heads up! Draft EV Chapter calls out specific PI responsibilities:**
- **Program Plan shall include EVM metrics**
 - **PI/PST shall verify execution of EVMS**
 - **EVMS data shall be continually analyzed and incorporated into program risk assessment**
 - **PI/PST shall provide PMs with timely, independent predictive analysis of EV data**
 - **PI/PST responsible for analysis of C/S impacts by sub-tier suppliers**

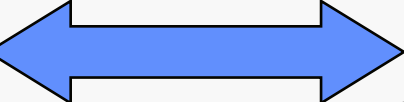


Program Analysis Planning

- ⊗ **Initial planning focuses on integrating cost/schedule/technical risk**
 - Identify high risk WBS elements
 - ▮ Assess resource planning/control
- ⊗ **Follow-on planning -- Adjust surveillance based on results of EV program and system analyses**
- ⊗ **Use PST meetings to discuss EV system/program status with entire team**



Program/EVMS Surveillance Plan

SYSTEM HEALTH  **PROGRAM HEALTH**

- ❑ **System Surveillance - Process assures system meets EVMS guidelines**
- ❑ **Program (contract) Surveillance - Process assures adequate insight into program performance**
- ❑ **System issues can impact program and visa-versa**
- ❑ **Integrated plan addresses BOTH program and system surveillance**



Program Surveillance Planning Considerations

❏ What?

→ Plan should address all functions called out by MOA/LOD

❏ Who?

- ❑ Which PST members participate
- ❑ Don't just identify EVMS Monitor

❏ When?

- ❑ Task frequency/surveillance schedule

❏ How?

- ❑ Metrics/evaluation criteria

❏ Adjustments?

- ❑ Modify surveillance based on results



PST Support to IBR

- ❑ **PST should support IBR**
- ❑ **PST assesses realism of plans through control account review/CAM discussions**
 - **Technical risk areas in the WBS**
 - ▢ **Extent of schedule development/logic**
 - ▢ **Validity/risk in resource budgets**
 - ▢ **Workflow to subs**
- ❑ **Provides PST with knowledge necessary to conduct surveillance throughout the program**



The Control Account

- ⊗ **Definition - Management control point consisting of work packages and planning packages, where accountability for performance is measure**
- ⊗ **Key aspects of the control account:**
 - **Time-phased schedule for overall task and sub-tasks (work packages)**
 - ▢ **Assigned labor and material dollars**
 - ▢ **Planned vs. actuals**
 - ▢ **Earned Value method used to determine in-process status**



Earned Value Methods

- ⊗ **Used to determine work progress**
- ⊗ **Various methods used depending on type of work**
 - **Discrete - specific end product/result**
 - ▢ **Level of effort - measure by passage of time**
 - ▢ **Apportioned effort - depends on other work**



Earned Value Methods

- ⊗ **EV methods for assigning work progress involve CAM judgment**
 - **PST should understand CAM's rationale**
 - ▮ **Incorporate knowledge of outstanding issues/risks**
- ⊗ **PST reviews selection of EV method and ensures actuals reflect true progress**
- ⊗ **Assessment requires detailed knowledge of work performed**



Assessing Labor

- ⊗ **Schedule developed for work to be performed**
- ⊗ **Cost is a function of rate and efficiency**
 - ▮ **Rate variance = (earned rate - actual rate) x actual hours**
 - ▮ **Efficiency variance = (earned hours - actual hours) x earned rate**



Assessing Material

- ⊗ **Includes parts ordering, acceptance, and release--based on program need**
- ⊗ **Cost is a function of price and usage**
 - ▮ **Price variance = (earned price - actual price) x actual quantity**
 - ▮ **Usage variance = (earned quantity - actual quantity) x earned price**



Verify Database/System Discipline

- ⊗ **PST provides technical support to document reviews, CAM discussions**
 - ▮ **Review new work packages for technical risk, schedule, and budget realism**
 - ▮ **On existing packages, assess credibility of completed work -- % complete**



Schedule Analysis

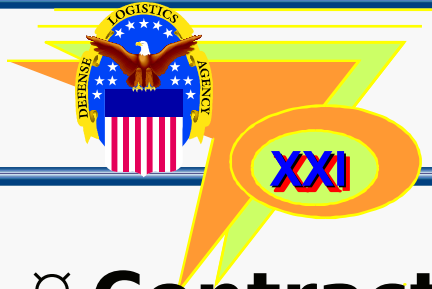
- ⊗ **At program start, PST reviews schedule**
 - **Proper inclusion of tasks and time phasing**
 - **Tasks correspond to WBS elements**
 - **Schedule traceability**
 - > **Control account <-----> IMS**
 - **Network relationships to other tasks**
 - > **Critical path can be determined**
- ⊗ **PST should periodically review schedules to ensure proper maintenance**
 - **“rolling-wave”, re-planning, changes**
- ⊗ **Assess in relation to schedule variance**



The Performance Measurement Baseline

⊗ Definition

- ▮ **Total of control accounts/planning packages and Undistributed Budget**
- ▮ **Includes Negotiated Contract Changes + Authorized Unpriced Work**
- ▮ **Does not include Management Reserve (MR)**
- ▮ **$PMB + MR = \text{Contract Budget Base (CBB)}$**



Revisions to the PMB

⊗ **Contract Changes**

→ **Authorized and definitized/undefinitized**

⊗ **Internal Replanning**

- ▢ **Individual tasks change**
- ▢ **MR may be added to PMB**
- ▢ **Performed at supplier discretion**

⊗ **Formal Reprogramming**

- ▢ **Referred to as Over-Target Baseline (OTB)**
- ▢ **Remaining budget/schedule unrealistic**
- ▢ **Requires formal Government approval**



Baseline Integrity

- ❑ **All changes accounted for in change log**
- ❑ **Contract changes should be incorporated in a timely manner**
- ❑ **Risk inherent in frequent re-planning**
- ❑ **PST follow-up on work transferred between accounts and associated with contract changes**
 - **Technical, schedule, budget realism**



Review Undistributed Budget

- ⊗ **Authorized contract effort not assigned to specific WBS elements**
 - **Used during contract change process for un-negotiated or not fully defined work**
 - ▮ **Normally not held for more than two reporting cycles**
 - ▮ **Usage shown on CPR and UB Log**
- **PI/EVMS Monitor reviews to ensure UB is distributed to control accounts in a timely manner**

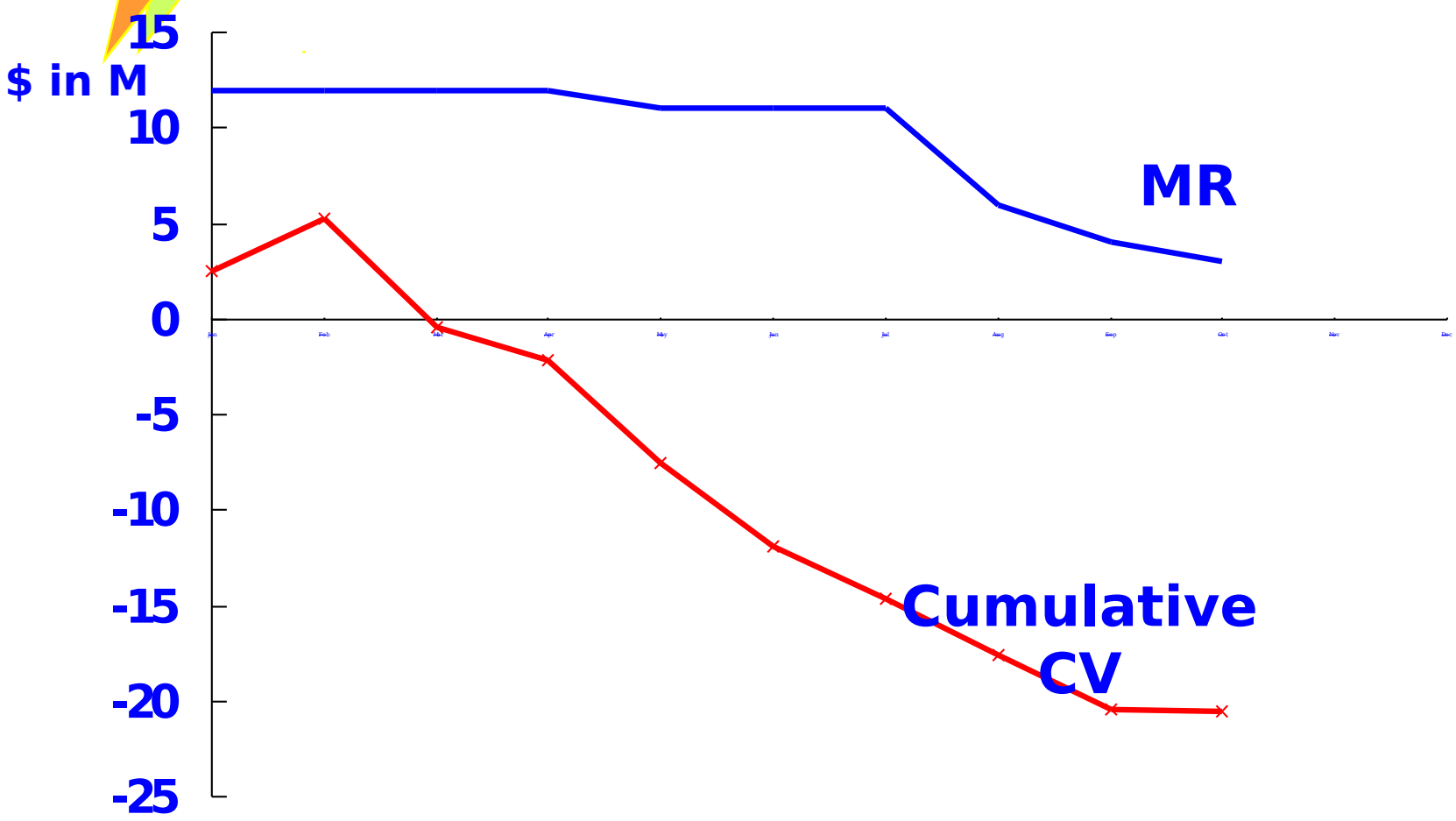


Use of Management Reserve

- ⊗ **MR is allocated for management control**
 - “Unknown unknowns”
 - ▮ Overhead rate adjustments
- ⊗ **MR is NOT used to fund cost overruns**
- ⊗ **Track usage via CPR and MR Log**
 - ▮ Ensure proper use
 - ▮ Cost variance must be assessed with respect to available MR



Management Reserve Usage



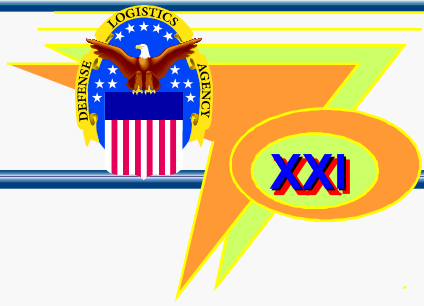
Management Reserve **How much?** **Time**
Questions: **How fast is it being used?** **Where?** **Proper use?**



Baseline Maintenance Exercise

Objective:

**Familiarize the audience
with interpretation of
baseline data contained
in Cost Performance
Reports**



Performance Data Analysis Objectives

- ❑ **Re-assess technical risk and resource management**
- ❑ **Analyze trends**
- ❑ **Verify accuracy of the performance data and determine effectiveness of corrective action**
- ❑ **Forecast cost/schedule impacts of issues and propose alternative work-arounds as necessary**



Program Risk Indicators

- ❑ **Application of MR**
- ❑ **Changes to PMB**
- ❑ **Near term staffing increases**
- ❑ **Unresolved sub-supplier issues**
- ❑ **Schedule variance implies future cost variance**
- ❑ **Negative cumulative trends at lower WBS elements**
- ❑ **Unrealistic or changing LRE**



Manpower Analysis

- ❑ **Disconnects between movement of resources (CPR Format 4) and movement of budget (CPR Format 3)**
- ❑ **Movement of manpower towards “front-end”**
 - **Indicates poor initial planning**
- ❑ **Look for manpower increases prior to major milestones**
- ❑ **Other staffing metrics may be available**
- ❑ **Inquire about staff turn-over rate**



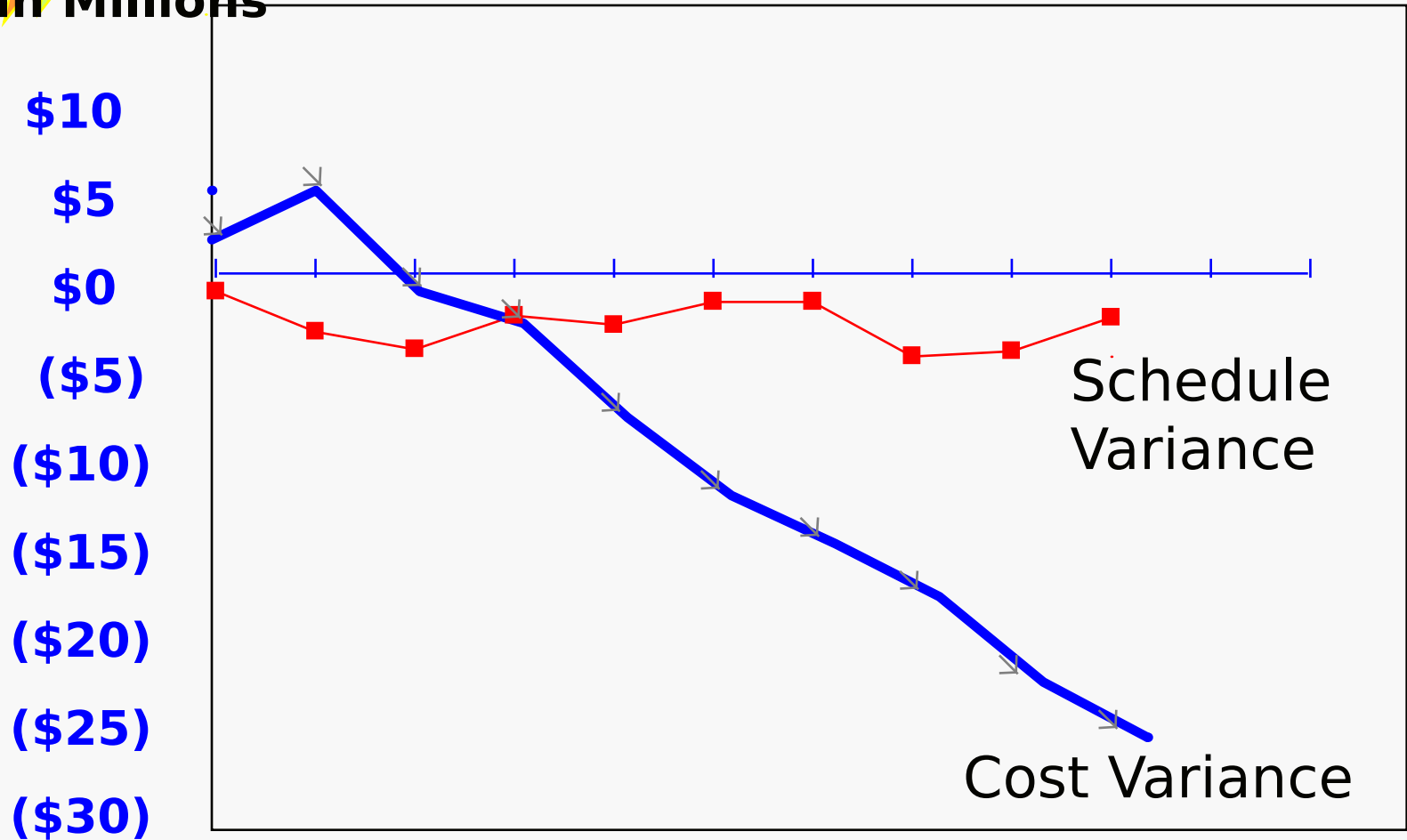
Difficulties with Subs

- ⊗ **Often large part (50-70%) of the prime contract value**
- ⊗ **May involve high risk, specialized tasks**
- ⊗ **C/S reporting may be limited**
- ⊗ **PI/PST should:**
 - **Ensure EV requirements are properly flowed**
 - ▢ **Monitor how prime manages subs**
 - ▢ **Identify sub-supplier risks**
 - ▢ **Understand how issues impact prime**



Example Trend Chart

\$ in Millions





Assess CPR Data and Corrective Action

- ❑ **Compare WBS variances and LRE (CPR Format 1) with explanations (Format 5)**
 - ❑ **Analysis should identify problem, impact, corrective action**
 - ❑ **Is issue correctly identified?**
 - ❑ **Does explanation, LRE accurately quantify near term and overall program impact?**
 - ❑ **Are effective corrective actions proposed?**
- ❑ **Follow-up with supplier as necessary**



PST Follow-up actions

- ❑ **Relate variances to underlying technical issues**
- ❑ **Relate schedule variance to time-phased schedules**
- ❑ **Quantify near-term (1-3 month) impact**
- ❑ **Quantify impact to EAC**
- ❑ **Develop alternative work-arounds**

Request lower level data and discuss with CAMs



Understanding Program Impact

- ❑ **Supplier fully understands root cause?**
- ❑ **When will issue be corrected?**
- ❑ **Are all resources necessary to correct variances accounted for?**
 - Labor, materials, subcontracts
- ❑ **Impact to other WBS elements?**
- ❑ **Estimates incorporate past performance?**
- ❑ **Potential to reoccur?**



Performance Data Analysis Exercise

Review 6 months CPR data. Draw conclusions about current contract status. Analyze variances and EACs. Consider additional information needed from the supplier.



Reporting to PMO

- ❑ **Discuss results of PST follow-up actions**
 - ❑ **Don't repeat CPR data**
 - ❑ **Forecast near-term (1-3 month) impacts**
 - ❑ **Assess supplier EAC--note areas of disagreement**
 - ❑ **Evaluate corrective action**
 - ❑ **Integrated technical, cost, schedule performance assessment**
- ❑ **Include results of “system” surveillance**
- ❑ **Take advantage of EV tools**
- ❑ **PST follow-up makes C/S data “timely”**



“Quad Chart” Requirement

- ❑ **Still in “draft” stage**
- ❑ **Provides quarterly summary status information to HQ**
 - **Keeps Gen Malishenko informed**
 - ▢ **Used to ID trends by supplier/PEO**
- ❑ **Current and 30/60/90 day forecast color ratings for all functional areas**
 - ▢ **Uses CPAR criteria**
- ❑ **Replaces need to forward copies of status reports**



Program Assessment “Quad Chart”

CONTACT NAME: DCMC CAO: BUYING COMMAND: PM:

CONTRACTOR: PI / PHONE: PEO: CLR:

ELEMENT	HISTORY						FORECAST		
	J	F	M	A	M	J	30	60	90
Cost Control	G	G	G	Y	Y	Y	Y	G	G
Schedule	G	Y	Y	Y	G	G	G	G	G
Product Assurance	G	G	G	G	G	G	G	G	G
Subcontract Mgt	R	R	Y	Y	Y	Y	Y	G	G
Program Mgt	Y	Y	Y	Y	Y	Y	Y	G	G
Engineering	G	G	G	G	G	G	G	G	G
Software	R	R	R	R	R	R	R	R	R

DCMC CONTRACTOR ASSESSMENT USING CPARS CRITERIA

Funding Data:

Program Value: ULO:

ACQ Stage: Contract Type:

Period of Perf: Progress Payment:

EVMS Data:

- CV:
- SV:
- % Comp:

Performance Based Outcomes

(Taken directly from the MOA)

Future Milestones: **Date:**

(Example PCA, FCA Milestone Decision)

Issues / Concerns **Actions / Responsibility** **Closure Date**



Discussion

“Real World Examples”

PST support to IBRs and “Re-baselining” activities

- Mr. Tom Casselberry - DCMC Van Nuys, TRW**

Good techniques for variance and EAC analysis

- Mr. Wai Wong - DCMC Santa Ana, Boeing**

Lessons learned applying Earned Value

- Mr. Steve Sacherski, DCMC Lockheed Martin Sanders**